Notes.

FRIENDS of the late Sir Norman Lockyer will be glad to know that 100*l.* has already been received for the portrait medallion which is to be placed at the observatory on Salcombe Regis Hill, but a further sum of 100*l.* is still required to complete the memorial. It is hoped that the medallion will be unveiled in the autumn, and donors will be notified of the date. Contributions should be sent to the hon. secretary of the Observatory Corporation, Capt. W. N. McClean, 1 Onslow Gardens, London, S.W.7.

A PRELIMINARY meeting in connection with the visit of the British Association for the Advancement of Science to Hull in 1922 has been convened by the Lord Mayor of the city. There was a representative gathering and a strong committee was formed. The town clerk, Mr. H. A. Learoyd, and the museums curator, Mr. T. Sheppard, were nominated as local honorary secretaries for the meeting, and the city treasurer, Mr. T. G. Milner, as hon. treasurer.

IN recent years an exhibition of botanical material has been a feature of the Section of Botany at meetings of the British Association. The recorder of the Section asks us to say that contributors who have material to exhibit during the forthcoming Edinburgh meeting should communicate their requirements at once to the local secretary, Mr. W. Wright Smith, the Botanic Gardens, Edinburgh.

A PUBLIC meeting has been arranged by the National Union of Scientific Workers to take place at 5.30 on Tuesday, September 13, in the new buildings of the Medical School, Edinburgh University, for the delivery of an address by Prof. H. Levy on "The Function of the Man of Science in Organised Research." The address will be followed by a discussion to be opened by Prof. H. H. Turner. The meeting will be presided over by Sir Richard Gregory.

A MEETING of the Royal Meteorological Society will be held in the Natural Philosophy Department of Edinburgh University on Wednesday, September 7, at 2.30, when the following papers will be read:—"The Functions of a Scientific Society, with Special Reference to Meteorology," R. H. Hooker; "Meteorology in Medicine," Dr. A. Macdonald; "Some Notes on Meteorology in War-time," C. J. P. Cave; "The Diurnal Variation of Pressure at Eskdalemuir, 1911–20," Dr. A. Crichton Mitchell; and "The Natural Tendency towards Symmetry of Motion and its Application as a Principle in Meteorology," Dr. S. Fujiwhara.

THE annual general meeting of the Institution of Mining Engineers will be held at Stoke-on-Trent on Wednesday, September 14, when the following papers will be read or taken as read:—"The Adsorption or Solubility of Methane and other Gases in Coal, Charcoal, and other Substances," by J. I. Graham; "Suggestions for the Standardisation of Geological Sections of Strata proved in Boreholes, Shafts, etc.," by H. Roscoe; and "Coal-mining by Steam Shovel in Alberta, Canada," by G. Sheppard. The following papers, which have already appeared in the Transactions, will be open for discussion:—"Third Report of the Committee on 'The Control of Atmospheric Conditions in Hot and Deep Mines': Observations of Temperature and Moisture in Deep Coal-mines," by J. P. Rees; and "Characteristics of Outbursts of Gas in Mines," by Prof. H. Briggs.

SIR C. H. BEDFORD has been appointed honorary adviser to the Secretary of State for the Colonies on questions relating to power and industrial alcohol in the Colonies and Protectorates.

MR. B. A. KEEN, head of the Soil Physics Department, Rothamsted Experimental Station, has been awarded a travelling fellowship by the Ministry of Agriculture. He has left for America to inspect general agricultural conditions in that country, with special reference to problems on soil cultivation.

MESSRS. S. A. HODGES and T. A. DAVIES, of H.M. Dockyard, Portsmouth, have respectively been awarded the scholarship for 1921 of the Institution of Naval Architects and the Earl of Durham prize of the same institution.

FRANCE is already preparing to celebrate on November 22, 1922, the centenary of the birth of Pasteur. England probably, in her old insular way and her usual indifference toward men of genius not her own, will let the sacred day pass without much notice. But Pasteur's work lives and moves and has its being in every country of the world. If every Englishman and Englishwoman who has cause to be grateful to him and his followers would subscribe sixpence, we should obtain enough money for a life-size golden image of him, and more than enough. It is one of our national disgraces that there is no memorial to him in London. Why should we not next year wipe that disgrace off our national slate? Poor London, weighted with so many dull and grimy statues of lesser men whose life and work are not to be named in the same breath with his! There is a good bust of him at the Pasteur Institute: so let us have a replica of it, and let it stand between Miss Nightingale and Lord Herbert, in front of the Guards' Memorial. These three monuments bear witness to the days when our sick and wounded in war—and in peace likewise—died like flies for lack of protective treatments against disease and of antiseptic and aseptic surgery and nursing. Pasteur shall bear witness to our redemption out of our ignorance.

THE Ministry of Agriculture and Fisheries and the Royal Horticultural Society have arranged to hold an International Potato Conference in London on November 16–18 next. During the conference, which will take place at the hall of the Royal Horticultural Society, Vincent Square, the National Potato Society will hold its annual show, at which it is expected that most British varieties of potatoes will be exhibited. An exhibit dealing with the scientific aspect of potato problems is also being arranged, and it is hoped that workers engaged on potato problems in all parts of the world will co-operate. The proceedings will open with Sir A. Daniel Hall's presidential address on the morning of November 16. Papers on the breeding and selection of potatoes in Great Britain and the United States, and on wart disease, potato blight, and other diseases which are botanically and economically important, will be read, and time has been allowed for their discussion. Invitations to attend the conference have been extended to the Dominions and Colonies and to foreign countries, and it is hoped that the meeting will be thoroughly representative from both the scientific and the commercial aspects. Arrangements for the meeting are in the hands of a committee representative of the Royal Horticultural Society, the Agricultural Departments of England, Scotland, and Ireland, the National Institute of Agricultural Botany, and the National Potato Society. The chairman of the committee is Lord Lambourne, and the joint secretaries are Mr. W. R. Dykes, of the Royal Horticultural Society, and Mr. H. V. Taylor, of the Ministry of Agriculture.

INFORMATION is to hand in a circular from the Brazilian Department of Agriculture that henceforth the meteorological and astronomical Government services united under the name "Directoria de Meteorologia e Astronomia" are to be separated, and will be known as the "Directoria de Meteorologia" and "Observatorio Nacional" respectively. The new Directoria de Meteorologia, of which Senhor Sampaio Ferraz has been made director, will, no doubt, lead to a desirable unification of official meteorology in a vast country like Brazil, and it is to be expected that the co-ordination of effort which should ensue will provide material for the study of a climate which is more or less unknown except in general outline. The publication before the end of the present year of climatological data of Brazil for the last nine years is anticipated, and among the activities promised under the new directorate are forecast, aviation, coastal navigation, agricultural, and rain and flood services. It is pointed out that Rio Grande do Sul, Minas Geraes, and San Paulo will continue their State services, but under the supervision of the Directoria, and that the Reclamation Service of semi-arid north-eastern Brazil will retain its rainfall organisation. Information on Brazilian climatology will be gladly given in answer to inquiries, and the Directorate hopes to exchange publications with foreign institutions. The official address is: Directoria de Meteorologia, Morro do Castello, Rio de Janeiro, Brazil.

AN interim report relating to alleged dangerous lights in kinema studios has been issued by the Departmental Committee on the Causes and Prevention of Blindness, acting on behalf of the Ministry of Health. Cases of inflammation of the eyes have been reported by Sir Anderson Critchett and others, but fortunately these injuries have been of a transient nature, and no instances of permanent serious injury are recorded. According to the evidence of experts, the trouble is due mainly to the use of very powerful arcs of the searchlight pattern in an unshaded condition. Such lamps are considered liable to cause injury owing to the unimpeded access of ultra-violet rays, and it is also possible that artists looking direct at the lights, even if properly screened, may suffer owing to the intense visible light. Moreover, irritating vapours may be given off by some forms of carbons and occasion trouble at close quarters. The Committee, however, considers that the possibilities of injury would be slight if all lamps were properly screened, and the evidence of photographic and other experts supports the view that these methods of diffusion are also preferable from the technical point of view. An assurance has been given by the Incorporated Association of Kinematograph Manufacturers that in future no open arc lights without glass filters will be used in their studios. Now that the source of the trouble is recognised, no further action is considered necessary for the present. The Committee, however, remarks that the industry is in a state of development, and that further research is desirable. It accordingly welcomes the information that the Illuminating Engineering Society is forming a joint committee to study these problems in detail.

A COMPLETE list of awards and grants from the Rumford Fund for Research in Light and Heat forms No. 10 of vol. 56 of the Proceedings of the American Academy of Arts and Sciences (July, 1921). In previous publications in 1905 and 1912 dealing with the Rumford Fund, outlines of the history of the funds of that name of both the American Academy and the Royal Society were given, together with lists to date of the awards. In the present publication the awards of the American Academy only, from the date of its foundation to the end of 1920, are given in chronological order. The first award of the Rumford Premium was made in 1839 to "Robert Hare, of Philadelphia, for his invention of the compound or oxyhydrogen blowpipe," and the last recorded, that of 1920, to "Irving Langmuir, of Schenectady, for his researches on thermionic and allied phenomena." The grants for research from the Rumford Fund extend from 1832 to 1920, and the names of many illustrious men of science appear in the list. The pamphlet concludes with an alphabetical list of recipients of the grant.

IN his Croonian lecture on "Release of Function in the Nervous System" (delivered at the Royal Society on May 5, and now published in the society's Proceedings) Dr. Henry Head has given an illuminating summary of his great work in neurology. Dr. Head is the successor of Hughlings Jackson, and the fundamental principle on which his investigations are based is the rule laid down by Jackson more than fifty years ago that "destructive lesions never cause positive effects, but induce a negative condition which permits positive symptoms to appear." In other words, in his interpretations of the clinical significance of the symptoms of injuries involving the central nervous system he has avoided the fashionable and misleading device of accepting all active manifestations of disease as the effects of irritation. "Removal of a dominant neural mechanism permits the activity of lower centres to appear. These unfettered manifestations are not fortuitous pathological states, but represent that part of a complex reaction which still remains active." It is impossible within the scope of a note such as this to give any adequate idea of a lecture that is itself the highly condensed summary of thirty years' research into problems of great inherent complexity which have become obscured by erroneous methods of interpretation. Dr. Head's work is a brilliant example of the successful application of the true scientific method in clinical medicine, and is complementary to Prof. Sherrington's investigation of the same sort of problems by the experimental method. Much as their researches are misunderstood and however inadequate the appreciation of their worth may be at the present time, there can be no doubt that in the future Head's and Sherrington's work will be known as the outstanding achievement of British science in neurology and the borderland between neurology and psychology. Dr. Head's contribution to this great advance in knowledge is well set forth in his Croonian lecture.

DR. J. RITCHIE contributes to the *Scottish Naturalist* (May–June, 1921) an interesting analysis of the status of the walrus as a member of the British fauna. He supposes that when the polar ice sheet extended much further south, and during its retreat in the late Ice age, the walrus was a regular inhabitant of British seas, and the evidence, though scanty, goes to show that even down to the sixteenth century it was regularly hunted by the islanders of Scotland for commercial purposes. In an analysis of the twenty-four records since 1800 Dr. Ritchie concludes that a change in its status has occurred, and that it is now only a straggler which chance conditions bring occasionally to our shores. Summer is predominantly the season for its visits, and its appearance in British waters is associated with the breaking-up of the winter ice of the Arctic and its gradual drift to sea under the influence of ocean currents and winds. The majority appear to have travelled from a westerly source towards Iceland, brought there by unusual developments of the Greenland-Iceland-Faroe oceanic circulation. A marked decrease in the numbers observed in British waters occurred after 1870, which Dr. Ritchie attributes to the activities of seal-hunters about that period in clearing the more southerly breeding-grounds off Greenland of their stocks.

IN an interesting article on "Snakes that Inflate" in *Natural History* (vol. 21, No. 2), Mr. G. K. Noble discusses the significance of an aggressive warning attitude assumed by certain snakes when disturbed. In *Spilotes pullatus mexicanus,* a harmless snake, he found that the animal, when uneasy or in a highly nervous state, inflated its neck and vibrated its tail, recalling the warning attitudes of cobras on one hand and of rattlesnakes on the other. The mechanism by which the snake is able to inflate itself is simple. The dorsal membrane of the trachea is an enormously expanded sheet capable of great distension, and the snake simply fills its lungs with air, closes the glottis, and, by means of its powerful body muscles, forces the air into the trachea, which then becomes distended. Mr. Noble finds this habit developed in many species of snakes, generally harmless, belonging to quite separate families, and the mechanism is in all cases the same. He regards the character as having arisen independently in a number of unrelated groups of snakes, and as an impressive example of parallelism in adaptation. Similar evidence is noted about the habit of vibrating the tail when disturbed. While admitting that both phenomena may be called warning attitudes, he suggests that both actions may be simply manifestations of an uncomfortable nervous state produced by the presence of some disturbing factor in the environment.

A RAIN map of Australia for the year 1920 has been issued by Mr. H. A. Hunt, Commonwealth Meteorologist. The distribution of rainfall in different parts of Australia is shown graphically for the year, and on the reverse side there is a rainfall map for each of the twelve months. For comparison a small map of Australia is given for each year from 1908 to 1920, which shows the percentage of the area with the rainfall above the average. In 1918 only 23 per cent., and in 1919 only 13 per cent., of the area received more than average rainfall; in 1920, however, on 54 per cent. of the area rainfall was above the average. The single sheet is admirably arranged, and the large amount of data in no way overcrowded. It affords a specimen for any rainfall organisation, and a similar sheet would be greatly appreciated by those interested in rainfall distribution in any country. A summary table and notes on the 1920 map are given. It is stated that the year will be memorable on account of the complete change from unpromising weather conditions during the early months to widespread rains in the latter half. The long drought which had prevailed over central and eastern Australia since the early part of 1918 was completely broken up. The splendid rains during the greater part of the agricultural season, April to October, are said to have resulted in one of the best harvests on record all through the wheat-belt. Brief summaries of the rainfall distribution in 1920 are given for each State. At many stations in South Australia 1920 was the wettest year on record.

MR. E. T. QUAYLE (Proc. R. Soc. Victoria, new ser., vol. 33, pp. 115–32, 1921) has issued an optimistic estimate of the beneficial effects on the climate and rainfall of Victoria and of the southern districts of New South Wales that may be expected from irrigation. He illustrates the fact that the leeward shores of wide arms of the sea have usually a higher rainfall than the windward shores by reference to the records from Spencer Gulf and Port Phillip. He considers that the extension of irrigation in the Murray valley may have the same effect as if the irrigated region were covered by an arm of the sea. He claims that higher evaporation will increase not only the local rainfall, but also that on the mountains in which the Murray River and its tributaries take their rise, so that the rivers will be magnified, and the benefits to the climate and the country will be so great and varied that "it would be hard to put any limits" on them. The evidence for these estimates is not convincing. That the influence of irrigation must be to increase the precipitation to some extent is not likely to be questioned; but the extent of the influence is uncertain. Mr. Quayle claims that irrigation has increased the rainfall during the past ten years. This period is, however, too short to give any trustworthy evidence of a permanent change, as are also the statistics quoted from 1885. Similar predictions have been made from other areas where extended irrigation happened to coincide with the wetter part of a climatic cycle. The absence of any increase of rainfall beside the irrigated areas of Egypt suggests caution in reliance on records for so short a period as are available in Victoria, especially as it is in a situation where irregular long-period variations in weather are so likely to occur.

MESSRS. LONGMANS AND CO. are to publish in the autumn vols. 1 and 2 of "A Comprehensive Treatise on Inorganic and Theoretical Chemistry," by Dr. J. W. Mellor, which work will consist of six volumes in all. Vol. 1 will to a large extent be historical and introductory, and give a general survey of chemical research and discovery from the earliest times to the present day. This volume will also deal in detail with hydrogen and oxygen in their many forms and compounds. Vol. 2 will cover the whole range of the following elements and a systematic range of related compounds:—Fluorine, chlorine, bromine, iodine, lithium, sodium, potassium, rubidium, and cæsium. The same publishers also promise a new edition—the fourth—of Dr. E. J. Russell's "Soil Conditions and Plant Growth."

MESSRS. W. HEFFER AND SONS, LTD., Cambridge, have in the press "Notes and Examples in the Theory of Heat Engines," by J. Case. The book is intended as a companion to lectures to enable the student to see at a glance the essential points of the subject and to help him with his revision for examinations. The engineer who has to deal with the elementary thermodynamics of steam and other heat engines should find the work of value, as all the important formulæ he may require are printed in heavy type and easily found.

A USEFUL catalogue (No. 89, August) of nearly two thousand second-hand books dealing with entomology, ornithology, general zoology, and botany has just been issued by Messrs. Dulau and Co., Ltd., 34 Margaret Street, W.1. It is obtainable upon application.

Our Astronomical Column.

LARGE METEORS.—Mr. W. F. Denning writes:—"A considerable number of unusually brilliant meteors were observed at about the period of the recent Perseid display. On August 11 at 9h. 28m. G.M.T. a very fine object was recorded at Bristol and at various places in South Wales. Near the end of its flight it illuminated the firmament so strongly that people at first mistook it for a flash of lightning. The meteor fell from a height of from 75 to 53 miles, and its path was over the region from Swansea to Barnstaple Bay. It was directed from the usual radiant point in Perseus.

"Another meteoric fireball appeared at 10h. 42m. G.M.T. on the same night. It passed over Berkshire at a height descending from 78 to 45 miles at a velocity of about 30 miles per second. This was also a Perseid, and it was observed from Bristol and Wimborne, Dorset.

"Another fireball was seen on August 15 at 9h. 46m. G.M.T. As viewed from Nuneaton, Warwickshire, by the Rev. Ivo Carr-Gregg, it crossed α Ursæ Majoris in a direction from Serpens and Scorpio. Only one observation has come to hand of the latter object, and a duplicate record of the path would supply the necessary data for computation of the fireball's real course in the air."

ANCIENT ECLIPSES.—Dr. J. K. Fotheringham was the Halley lecturer this year, and chose ancient eclipses as his subject. He noted the appropriateness of the choice, since Dr. Halley had been the first to announce the secular acceleration of the moon's motion from his study of the old eclipses.

Dr. Fotheringham expresses surprise that Dr. E. W. Brown in his new tables of the moon adopts the value $6''$ per century which arises from the change in the eccentricity of the earth's orbit; the ancient eclipses, as discussed by Drs. Fotheringham and Cowell (misprinted "Cavell" on p. 25 of the lecture), make it tolerably certain that the actual value is $4''$ or $5''$ greater, and that the sun has also an acceleration of at least $1{\cdot}5''$, presumably arising from a retardation of the earth's rotation.

One of the most definite records of eclipses is that of Thucydides (August 3, 431 B.C.); it has hitherto been inferred that, since "some stars became visible," Athens must have been close to the central line, but Dr. Fotheringham shows that a magnitude of $10\frac{1}{2}$ digits suffices. In the eclipse of last April Venus, Mercury, Capella, Vega, Arcturus, and Aldebaran were seen at places in the British Isles where the magnitude did not exceed 10·6.

In addition to their application to astronomy, the lecture shows the great value of several of these eclipses from the chronological point of view; in fact, their combination with Ptolemy's and the Assyrian eponym canons determines dates back to the tenth century B.C.

CALENDAR DATES IN METEOROLOGY.—M. Jean Mascart contributes a paper to *Comptes rendus* of July 11 in which he points out the desirability of dating meteorological phenomena by the sun's longitude in place of the calendar date. Owing to the odd fraction of a day that occurs in the length of the tropical year, the same calendar date corresponds with different solar longitudes. There is, of course, no question that M. Mascart's contention is sound in theory; but since it is almost inevitable that the observations should be taken at fixed hours of the solar day, it would involve considerably more labour to re-arrange them in accordance with the sun's longitude, and it is very doubtful whether there would be any adequate compensation for such extra work.